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FOREST RESOURCE STATISTICS CASCADE COUNTY, MONTANA

by

H.J. Pissot
and F.F. Peffer

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Prepared by the

DIVISION OF FOREST ECONOMICS

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FOREST RESOURCE STATISTICS

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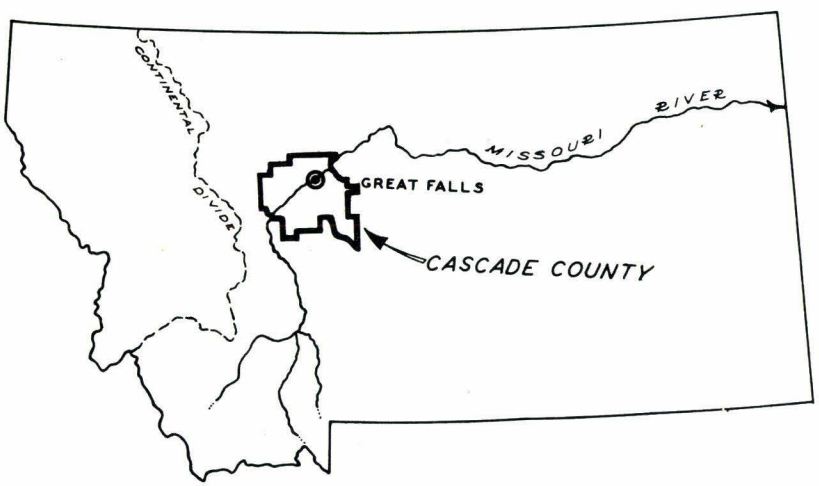

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FOREST RESOURCE STATISTICS

CASCADE COUNTY, MONTANA

By

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Foreword

The McSweeney-McNary Forest Research Act of May 22, 1928, authorized and directed the Secretary of Agriculture, in cooperation with state and private agencies, to make a comprehensive Nation-wide survey of forest resources. The objective of the survey was to assemble whatever information was considered necessary to provide ways and means of balancing the timber budget of the United States. The Secretary of Agriculture delegated the authority to the Forest Service, which assigned the task to the several regional forest experiment stations.

The study was designed to include five major phases: (1) an inventory of the extent and condition of forest lands, of timber supplies and of other forest products; (2) a determination of current and potential growth on forest land; (3) a determination of current drain resulting from cutting and other factors; (4) a determination of present consumption and estimated future requirements for timber and other forest products; and (5) an analysis of the facts for the purpose of formulating national policies to improve the forest situation.

In 1940 the Northern Rocky Mountain Forest and Range Experiment Station initiated county-by-county surveys of the forest resources in eastern Montana. By the end of 1943, field work and office compilation had been completed for Fergus, Judith Basin, and Chouteau Counties. The results were published in a series of statistical releases.

Field work in Cascade County was suspended in 1942 because of World War II. Upon termination of the war, the survey was renewed and the field work was completed in 1946. Adjustments were made in the statistics obtained prior to the war so that the data presented in the following report are as of 1947.

Summary of Findings

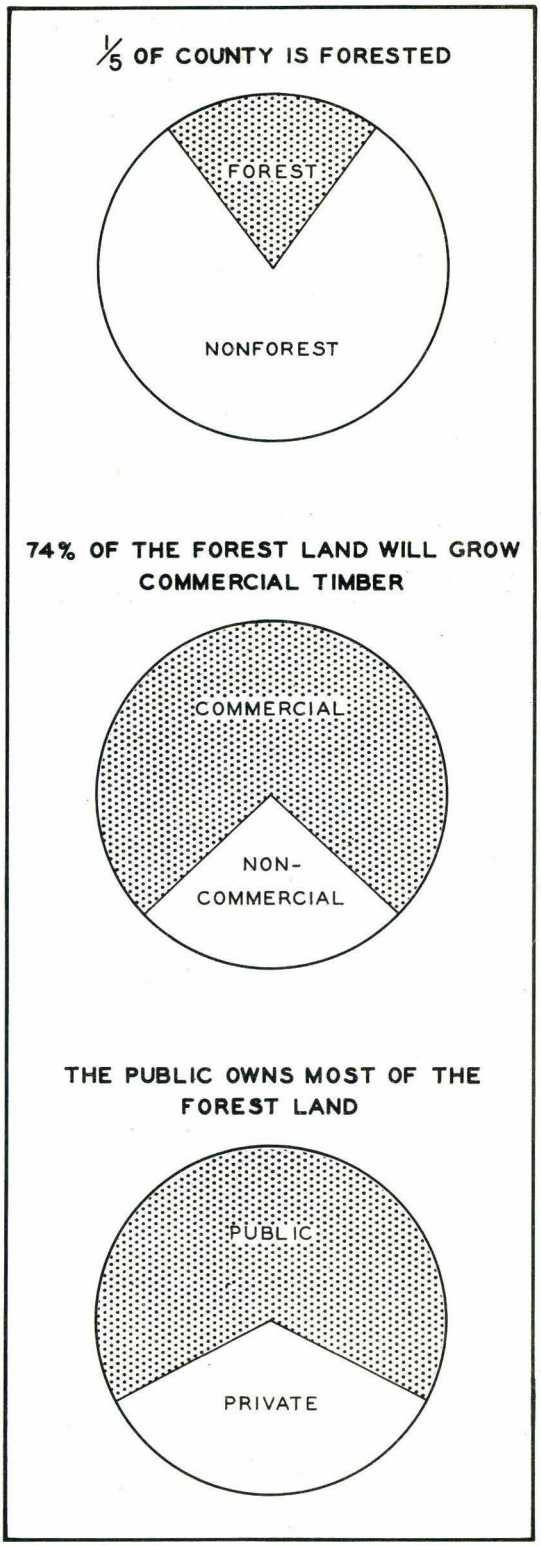
FOREST AREA

Cascade County, so named because of the numerous cascades in the Missouri River, was formed in 1887 from portions of Meagher, Lewis & Clark, and Chouteau Counties. Its forests are mainly in the southern part of the county in the Belt Mountains. They are of value not only for their timber, but because of their effect on water runoff and on soil stability.

With a gross land area of slightly more than 1.7 million acres, Cascade County has approximately 319,000 acres or 19 percent of its area in forests. Of this, three quarters or 236,000 acres is classified as commercial forest land -- areas capable of producing commercial timber and economically accessible now or prospectively. The remaining 83,000 acres are noncommercial -- areas chiefly valuable for purposes other than timber production.

The Lewis & Clark National Forest, established by President Cleveland in 1897, includes nearly 55 percent of the forest land in Cascade County. Small private owners possess the next largest forest area. They have nearly 98,000 acres in contrast to the national forest with 174,000 acres. The state and county together own about 17,000 acres.

The condition of the forest land, both public and private, should be cause for public concern. One half of all the forest area is not stocked satisfactorily. On privately owned, county, state, and public domain forests, the situation is worse with nearly 68 percent unsatisfactorily stocked. The national forest is somewhat better off with only 37 percent unsatisfactorily stocked. To remedy this situation requires intensive forest practices; not just fire protection, but removal of decadent and low quality trees, planting on the most productive areas, and controlled cutting and grazing.



TIMBER VOLUME

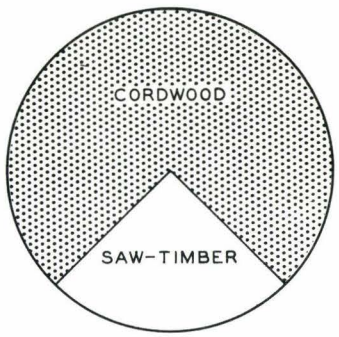
Cascade County has 100,587,000 board feet, Scribner scale, of sawtimber. Slightly more than 66 million board feet of this is found on 17,291 acres of stocked sawtimber stands. This is an average of 3,822 board feet per acre. The sawtimber stands have 15,470,900 cubic feet of sawtimber and pole trees, or an average of 895 cubic feet per acre.

The largest volume of sawtimber is in lodgepole pine with 32,527,000 board feet; second is Douglas-fir with 26,530,000; and third is ponderosa pine with 21,830,000. These three species make up 81 percent of the sawtimber volume. The remainder is in small quantities of cottonwood, spruce, alpine fir, white bark and limber pine, box elder, and black willow.

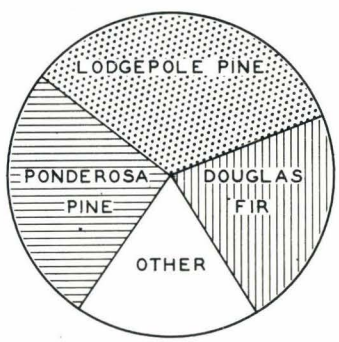
Cordwood trees, more than 5.0 inches d.b.h. but less than sawtimber size (11.0 inches d.b.h. for hardwood and pines and 13.0 inches for all other species), make up three quarters of the cubic volume. The total cordwood tree volume is 65,414,400 cubic feet or about 750,000 cords. Of this total 4/10 is lodgepole and 3/10 Douglas-fir. These species are a potential source of pulpwood as they occur in concentrations conducive to private logging operations.

The Lewis & Clark National Forest contains nearly 60 percent of the sawtimber volume in the county. Much of this timber is in the Little Belt Mountains and is relatively inaccessible at the present time.

75% OF THE TIMBER VOLUME IS IN CORDWOOD TREES



3 SPECIES MAKE UP 81% OF THE SAW-TIMBER VOLUME



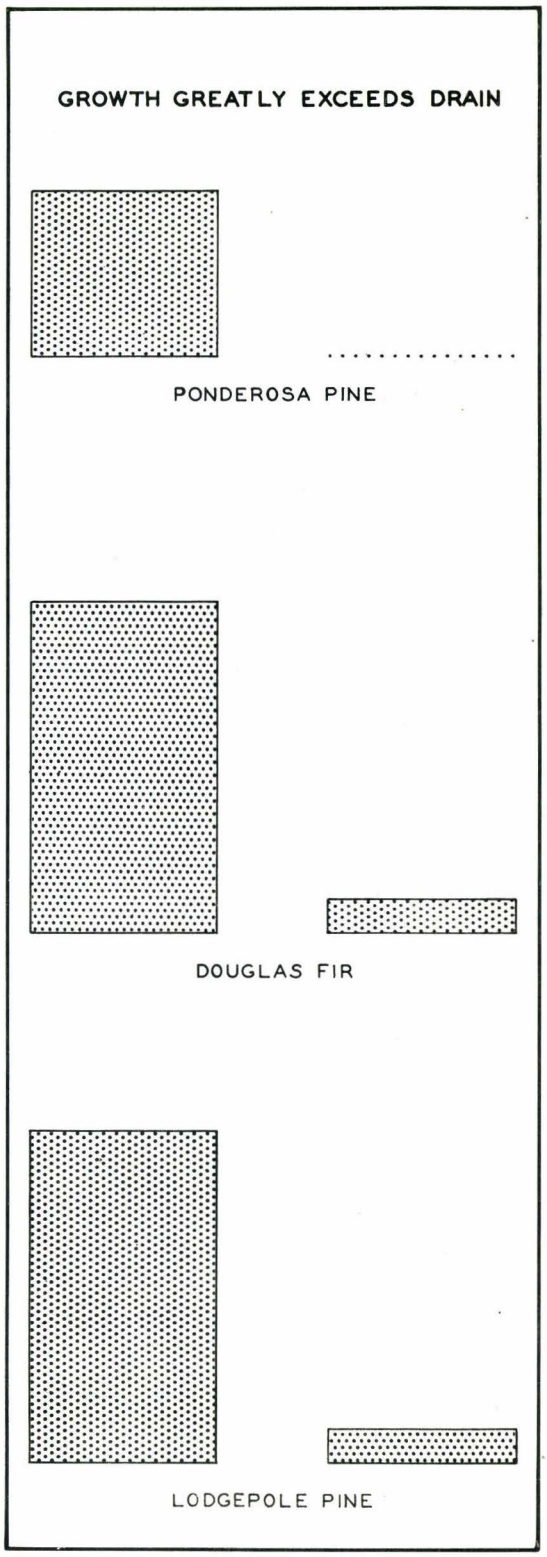
THE LEWIS AND CLARK FOREST HAS 60% OF THE SAW-TIMBER VOLUME

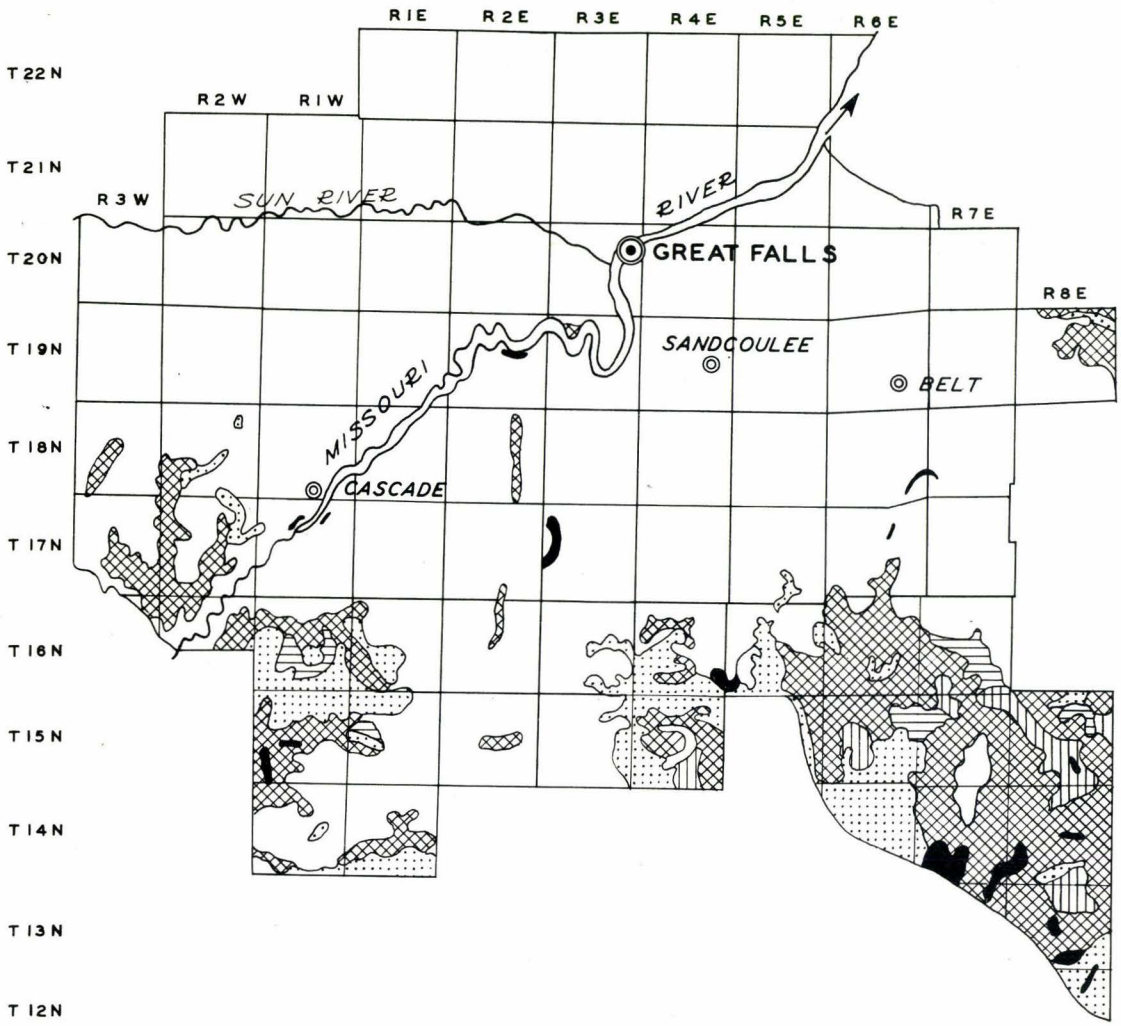
GROWTH AND DRAIN

Annual growth exceeds drain in all major species but cottonwood. This favorable growth-drain relationship is most striking on a cubic-foot basis where the growth is seven times the drain. But even in terms of the board-foot volume, growth is more than three times as great as drain. In the case of cottonwood, however, the situation is reversed and the losses from cutting and fire are three times the growth. But with other species, notably lodgepole pine and Douglas-fir, the growth far exceeds the drain so that a generally favorable growth-drain relationship exists in the county.

Drain from cutting in the past has not depleted the forest stands. With the construction of transcontinental railroads through Montana and the westward migration at the close of the nineteenth century, timber was chiefly used for cross ties, fuel, and local building. More recently, a good share of the cutting has produced lumber for construction, converter poles for the smelter at Great Falls, and timbers for the mines near Sandcoulee and Neihart. Much timber is also utilized for fence posts and fuelwood. Loss due to fire is generally of little consequence, except in Douglas-fir where over 90 percent of the drain in recent years can be attributed to that cause.

In the past few decades not more than three sawmills have operated in the county at any one time. However, the current excess of growth over drain indicates that in the near future there should be some expansion in the cutting program. Therefore, a few more sawmills of the portable type could be advantageously located in Cascade County. In addition, much of the lodgepole pine and Douglas-fir in the pole stands should be moved into the pulpwood market.





GENERALIZED FOREST MAP
CASCADE COUNTY MONTANA
1948

0 1 2 3 4 5
MILES

LEGEND

- SUBALPINE AND ROCKY NONCOMMERCIAL
- SAWTIMBER STANDS
- POLE STANDS
- SEEDLING & SAPLING STANDS
- NONSTOCKED LAND
- NONFOREST LAND

Survey Method

The inventory statistics presented in this paper were assembled under the compilation method of survey. This method involves first the preparation of detailed type maps and second the compilation of area by various forest stratifications and the computation of volume statistics from area statistics and average acre volumes.

Preliminary cover classifications were made on a base map 1/ by township units from aerial photographs, Forest Service grazing maps and General Land Office plats. These classifications were checked and further stratified by field inspection.

Detailed timber cruises for this country were not available from either public or private agencies. Therefore, timber volumes were determined from sample plots and ocular estimates for each sawtimber stand and from modified normal yield tables for other stands. The modified normal yield tables were derived from a correlation of actual volumes as determined by sample plots with normal volumes by type, stocking, age, and site class.

1/ Upon request copies of the individual township maps are available at the cost of printing.

CASCADE COUNTY

Table 1. - Land [1/] area by use and ownership [2/], 1947

Land use	Large private	Small private	State	County	Public domain	Total	National forest	Total all ownerships
				-Acres-				
Forest land:								
Commercial								
Nonreserved	7,184	77,932	5,900	3,075	9,653	103,744	130,579	234,323
Reserved	-	-	-	-	-	-	1,706	1,706
Total	7,184	77,932	5,900	3,075	9,653	103,744	132,285	236,029
Noncommercial								
Nonreserved	5,519	19,751	3,698	4,773	7,709	41,450	40,700	82,150
Reserved	-	-	-	-	-	-	712	712
Total	5,519	19,751	3,698	4,773	7,709	41,450	41,412	82,862
Total forest land	12,703	97,683	9,598	7,848	17,362	145,194	173,697	318,891
Nonforest land:								
Cultivated, pasture and grass	23,196	1,225,401	79,258	16,529	36,203	1,380,587	10,988	1,391,575
Townsites	-	-	-	-	-	-	52	52
Brush	-	-	-	-	-	-	551	551
Barren	-	10	14	-	-	24	2,703	2,727
Total nonforest land	23,196	1,225,411	79,272	16,529	36,203	1,380,611	14,294	1,394,905
Grand total land area	35,899	1,323,094	88,870	24,377	53,565	1,525,805	187,991	1,713,796

1/ Exclusive of 1,168 acres of segregated water surface; gross area is 1,714,964 acres.

2/ Minimum areas considered in the ownership segregation were compact blocks of about 20 acres. Smaller mineral claims, city lots, etc., and all rights of way were included in the adjacent predominating ownership.

CASCADE COUNTY

Table 2. - Forest land area by ownership and commercial character, 1947

Commercial character and stocking condition	Large private	Small private	State	County	Public domain	Total	National forest	Total all ownerships
				-Acres-				
Commercial 1/								
Nonreserved 2/								
Stocked	6,378	73,691	4,862	1,085	7,556	93,572	121,323	214,895
Nonstocked	806	4,241	1,038	1,990	2,097	10,172	9,256	19,428
Total	7,184	77,932	5,900	3,075	9,653	103,744	130,579	234,323
Reserved 3/								
Stocked	-	-	-	-	-	-	1,706	1,706
Nonstocked	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	1,706	1,706
Total commercial	7,184	77,932	5,900	3,075	9,653	103,744	132,285	236,029
Noncommercial 1/								
Nonreserved 2/								
Stocked	4,277	18,610	3,252	1,362	3,743	31,244	37,803	69,047
Nonstocked	1,242	1,141	446	3,411	3,966	10,206	2,897	13,103
Total	5,519	19,751	3,698	4,773	7,709	41,450	40,700	82,150
Reserved 3/								
Stocked	-	-	-	-	-	-	712	712
Nonstocked	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	712	712
Total noncommercial	5,519	19,751	3,698	4,773	7,709	41,450	41,412	82,862
Grand total	12,703	97,683	9,598	7,848	17,362	145,194	173,697	318,891

1/ Forest land now bearing commercial timber or considered suitable for commercial timber production is classified as commercial; noncommercial forest land consists of subalpine and other forest land considered unsuitable for commercial timber production.

2/ Forest land on which commercial timber cutting is not prohibited by statute, proclamation or policy.

3/ Forest land on which commercial timber cutting is prohibited by statute, proclamation or policy.

CASCADE COUNTY

Table 3. - Nonreserved commercial forest land by type stand class and ownership, 1947

Type and stand class	Large private	Small private	State	County	Public domain	Total	National forest	Total all ownership
				-Acres-				
Ponderosa pine								
Sawtimber	-	2,024	52	-	205	2,281	237	2,518
Pole	1,553	8,209	564	90	822	11,238	9,919	21,157
Seedling-sapling	-	40	-	-	-	40	1,116	1,156
Total	1,553	10,273	616	90	1,027	13,559	11,272	24,831
Douglas-fir								
Sawtimber	21	706	-	5	263	995	2,669	3,664
Pole	1,266	15,461	1,345	305	2,463	20,840	20,303	41,143
Seedling-sapling	-	93	-	-	-	93	7,133	7,226
Total	1,287	16,260	1,345	310	2,726	21,928	30,105	52,033
Spruce								
Sawtimber	-	-	-	-	-	-	-	-
Pole	-	-	-	-	-	-	1,427	1,427
Seedling-sapling	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	1,427	1,427
Lodgepole pine								
Sawtimber	-	11	-	-	-	11	6,522	6,533
Pole	10	1,792	153	-	15	1,970	55,546	57,516
Seedling-sapling	112	133	115	-	-	360	15,217	15,577
Total	122	1,936	268	-	15	2,341	77,285	79,626
Ponderosa pine woodland 1/								
Sawtimber	-	-	-	-	-	-	-	-
Pole	2,890	31,281	1,506	685	3,322	39,684	489	40,173
Seedling-sapling	-	-	-	-	-	-	-	-
Total	2,890	31,281	1,506	685	3,322	39,684	489	40,173
Douglas-fir woodland 1/								
Sawtimber	-	-	-	-	-	-	-	-
Pole	384	2,579	669	-	208	3,840	212	4,052
Seedling-sapling	-	-	-	-	-	-	-	-
Total	384	2,579	669	-	208	3,840	212	4,052
Lodgepole pine woodland 1/								
Sawtimber	-	-	-	-	-	-	-	-
Pole	-	60	-	-	-	60	-	60
Seedling-sapling	-	-	-	-	-	-	-	-
Total	-	60	-	-	-	60	-	60
Hardwood								
Sawtimber	18	4,247	61	-	250	4,576	-	4,576
Pole	124	6,959	315	-	8	7,406	533	7,939
Seedling-sapling	-	96	82	-	-	178	-	178
Total	142	11,302	458	-	258	12,160	533	12,693
All stocked types								
Sawtimber	39	6,988	113	5	718	7,863	9,428	17,291
Pole	6,227	66,341	4,552	1,080	6,838	85,038	88,429	173,467
Seedling-sapling	112	362	197	-	-	671	23,466	24,137
Total	6,378	73,691	4,862	1,085	7,556	93,572	121,323	214,895
Nonstocked burns	806	4,195	1,038	1,990	2,097	10,126	9,170	19,296
Nonstocked cutovers	-	46	-	-	-	46	86	132
Total	806	4,241	1,038	1,990	2,097	10,172	9,256	19,428
Grand total	7,184	77,932	5,900	3,075	9,653	103,744	130,579	234,323

1/ Fringe type forests forming very thin stands of quasi-commercial character, intermingled with prairie.

CASCADE COUNTY

Table 3a. - Nonreserved commercial forests by ownership and cutting condition 1/, 1947

Type and cutting condition	Large private	Small private	State	County	Public domain	Total	National forest	Total all ownerships
				-Acres-				
Ponderosa pine								
Sawtimber								
Partially cut	-	17	-	-	-	17	73	90
Uncut	-	2,007	52	-	205	2,264	164	2,428
Pole & seedling-sapling								
Cut	-	494	-	-	-	494	-	494
Uncut	4,443	39,036	2,070	775	4,144	50,468	11,524	61,992
All other types								
Sawtimber								
Partially cut	-	226	-	-	-	226	-	226
Uncut	39	4,738	61	5	513	5,356	9,191	14,547
Pole & seedling-sapling								
Cut	-	1,651	351	-	18	2,020	1,696	3,716
Uncut	1,896	25,522	2,328	305	2,676	32,727	98,675	131,402
Total all types								
Sawtimber								
Partially cut	-	243	-	-	-	243	73	316
Uncut	39	6,745	113	5	718	7,620	9,355	16,975
Pole & seedling-sapling								
Cut	-	2,145	351	-	18	2,514	1,696	4,210
Uncut	6,339	64,558	4,398	1,080	6,820	83,195	110,199	193,394
Grand total	6,378	73,691	4,862	1,085	7,556	93,572	121,323	214,895

1/ Sawtimber stands in which logging reduced the original volume less than 10 percent, and pole and seedling-sapling stands following fire that was not preceded by logging, are classified as uncut. Sawtimber stands in which logging reduced the original volume 10 percent or more but at the time of mapping averaged at least 3 or 4 thousand board feet per acre are classified as partially cut. Pole and seedling-sapling stands following cutting are classified as cut.

CASCADE COUNTY

Table 3b. - Nonreserved commercial forest 1/ land by ownership, type and site class, 1947

Type and stocking	National forest land						All other forest land					
	Site class						Site class					
	II	III	IV	V	VI	Total	II	III	IV	V	VI	Total
	-Acres-											
Ponderosa pine 2/												
Stocked	-	3,816	6,948	347	161	11,272	-	2,838	5,075	2,063	3,583	13,559
Nonstocked 3/	-	1,123	2,172	337	112	3,744	-	512	933	572	993	3,010
Douglas-fir 4/												
Stocked	-	435	11,527	17,420	723	30,105	-	592	5,909	14,859	568	21,928
Nonstocked	-	-	401	777	75	1,253	-	71	1,709	5,055	285	7,120
Spruce 5/												
Stocked	-	-	1,168	259	-	1,427	-	-	-	-	-	-
Nonstocked	-	-	-	-	-	-	-	-	-	-	-	-
Lodgepole pine 6/												
Stocked	28	33,239	39,492	4,526	-	77,285	8	526	1,162	645	-	2,341
Nonstocked	-	1,576	2,172	511	-	4,259	-	8	21	13	-	42
Ponderosa pine woodland 2/												
Stocked	-	-	-	-	489	489	-	-	-	-	39,684	39,684
Nonstocked	-	-	-	-	-	-	-	-	-	-	-	-
Douglas-fir woodland 4/												
Stocked	-	-	-	-	212	212	-	-	-	-	3,840	3,840
Nonstocked	-	-	-	-	-	-	-	-	-	-	-	-
Lodgepole pine woodland 6/												
Stocked	-	-	-	-	-	-	-	-	-	-	60	60
Nonstocked	-	-	-	-	-	-	-	-	-	-	-	-
All types												
Stocked	28	37,490	59,135	22,552	1,585	120,790	8	3,956	12,146	17,567	47,735	81,412
Nonstocked 3/	-	2,699	4,745	1,625	187	9,256	-	591	2,663	5,640	1,278	10,172
Grand total	28	40,189	63,880	24,177	1,772	130,046	8	4,547	14,809	23,207	49,013	91,584

1/ Exclusive of hardwood types which are not classified by site.

2/ The medians of site classes III to VI correspond respectively to site indices 94, 77, 64, and 50 as defined by W. H. Meyer, U. S. Dept. of Agriculture Tech. Bull. 632, 1938.

3/ All nonstocked areas are classified according to the type of their latest forest stand.

4/ The medians of site classes III to VI correspond respectively to site indices 55, 45, 35, and 25 as defined by L. J. Cummings' unpublished manuscript, Northern Rocky Mountain Forest and Range Experiment Station, 1936.

5/ The medians of site classes IV and V correspond respectively to site indices 40 and 30 as defined by I. T. Haig, U. S. Dept. of Agric. Tech. Bull. 323, 1932.

6/ The medians of site classes II to VI correspond respectively to site indices 55, 45, 35, 25, and 15 as adapted from D. T. Mason, U. S. Dept. of Agric. Bull. 154, 1915.

CASCADE COUNTY

Table 3c. - Nonreserved commercial forests by stocking condition, 1947

Type and stand class	Ownership class and stocking condition					
	National forest			All other owners		
	Satisfactory 1/	Unsatisfactory 2/	Total	Satisfactory 1/	Unsatisfactory 2/	Total
	Acres					
Ponderosa pine						
Sawtimber	-	237	237	-	2,281	2,281
Pole	4,508	5,411	9,919	6,279	4,959	11,238
Seedling-sapling	852	264	1,116	40	-	40
Douglas-fir						
Sawtimber	-	2,669	2,669	-	995	995
Pole	14,916	5,387	20,303	18,717	2,123	20,840
Seedling-sapling	3,406	3,727	7,133	55	38	93
Spruce						
Sawtimber	-	-	-	-	-	-
Pole	1,362	65	1,427	-	-	-
Seedling-sapling	-	-	-	-	-	-
Lodgepole pine						
Sawtimber	-	6,522	6,522	-	11	11
Pole	41,943	13,603	55,546	1,967	3	1,970
Seedling-sapling	8,895	6,322	15,217	85	275	360
Ponderosa pine woodland						
Sawtimber	-	-	-	-	-	-
Pole	-	489	489	-	39,684	39,684
Seedling-sapling	-	-	-	-	-	-
Douglas-fir woodland						
Sawtimber	-	-	-	-	-	-
Pole	-	212	212	-	3,840	3,840
Seedling-sapling	-	-	-	-	-	-
Lodgepole pine woodland						
Sawtimber	-	-	-	-	-	-
Pole	-	-	-	-	60	60
Seedling-sapling	-	-	-	-	-	-
Hardwood						
Sawtimber	-	-	-	-	4,576	4,576
Pole	528	5	533	3,040	4,366	7,406
Seedling-sapling	-	-	-	178	-	178
Total all types						
Sawtimber	-	9,428	9,428	-	7,863	7,863
Pole	63,257	25,172	88,429	30,003	55,035	85,038
Seedling-sapling	13,153	10,313	23,466	358	313	671
Grand total	76,410	44,913	121,323	30,361	63,211	93,572

1/ Stands having 40 percent or more of normal basal area are classified as satisfactorily stocked.
2/ Stands having a basal area ranging from 1 to 39 percent of normal are classified as unsatisfactorily stocked.

CASCADE COUNTY

Table 4. - Nonreserved commercial forest land by age class and type, and by age class and ownership, 1947

Type	Non-stocked	Age class - years: 1-20	21-40	41-60	61-80	81-100	101-120	121-140	141-160	161+	Unclassified 1/	Total
							-Acres-					
Ponderosa pine	6,754	195	2,841	13,617	5,606	77	95	128	721	1,551	40,173	71,758
Douglas-fir	8,373	4,526	8,429	18,683	14,815	1,835	74	158	1,682	1,831	4,052	64,458
Spruce	-	-	-	409	946	72	-	-	-	-	-	1,427
Lodgepole pine	4,301	1,210	12,015	30,455	19,555	16	1,387	9,479	3,134	2,375	60	83,987
Hardwood	-	-	-	-	-	-	-	-	-	-	12,693	12,693
Total	19,428	5,931	23,285	63,164	40,922	2,000	1,556	9,765	5,537	5,757	56,978	234,323
Ownership												
Large private	806	96	484	1,568	724	50	16	3	4	17	3,416	7,184
Small private	4,241	889	3,850	12,123	8,089	724	134	167	781	1,712	45,222	77,932
State	1,038	98	470	996	582	31	-	3	16	33	2,633	5,900
County	1,990	13	49	170	136	24	3	-	-	5	685	3,075
Public domain	2,097	120	440	1,646	969	119	14	16	132	312	3,788	9,653
Total	10,172	1,216	5,293	16,503	10,500	948	167	189	933	2,079	55,744	103,744
National forest	9,256	4,715	17,992	46,661	30,422	1,052	1,389	9,576	4,604	3,678	1,234	130,579
Total all classes	19,428	5,931	23,285	63,164	40,922	2,000	1,556	9,765	5,537	5,757	56,978	234,323

1/ Hardwood and woodland types are not classified by age.

CASCADE COUNTY

Table 5. - Sawtimber volume (Scribner rule) of the nonreserved commercial forests by species and ownership, 1947

Ownership class	Area of stands	Ponderosa pine	Douglas-fir	Spruce	Lodgepole pine	Alpine fir	White bark and limber pine	Cotton-wood	Golden aspen	Box elder	Black willow	Total
	Acres	Thousand board feet 1/										
SAWTIMBER STANDS												
Large private	39	-	42	-	42	21	-	72	-	-	-	177
Small private	6,988	6,089	3,149	-	235	183	-	14,665	-	310	204	24,835
State	113	156	-	-	-	-	-	248	-	-	2	406
County	5	-	25	-	-	-	-	-	-	-	-	25
Public domain	718	615	724	-	346	173	-	797	-	-	-	2,655
Total	7,863	6,860	3,940	-	623	377	-	15,782	-	310	206	28,098
National forest	9,428	746	11,248	59	24,394	582	957	-	-	-	-	37,986
Total all classes	17,291	7,606	15,188	59	25,017	959	957	15,782	-	310	206	66,084
POLE AND SEEDLING-SAPLING STANDS												
Large private	6,339	985	753	2	29	-	28	-	-	-	-	1,797
Small private	66,703	5,644	3,064	21	228	3	173	177	-	-	-	9,310
State	4,749	284	221	1	18	-	15	-	-	-	-	539
County	1,080	115	18	-	3	-	1	-	-	-	-	137
Public domain	6,838	760	677	4	27	1	11	-	-	-	-	1,480
Total	85,709	7,788	4,733	28	305	4	228	177	-	-	-	13,263
National forest	111,895	6,436	6,609	248	7,205	103	639	-	-	-	-	21,240
Total all classes	197,604	14,224	11,342	276	7,510	107	867	177	-	-	-	34,503
Total all stands	214,895	21,830	26,530	335	32,527	1,066	1,824	15,959	-	310	206	100,587

1/ The utilizable volume of hardwoods and pines larger than 11.0 inches d.b.h. and of trees of all other species larger than 13.0 inches d.b.h., scaled in 16-foot logs.

CASCADE COUNTY

Table 6. - Sawtimber volume (Scribner rule) of the nonreserved commercial forests by species and type, 1947

Type	Area of stands	Ponderosa pine	Douglas-fir	Spruce	Lodgepole pine	Alpine fir	White bark and limber pine	Cotton-wood	Golden aspen	Box elder	Black willow	Total
	Acres	Thousand board feet 1/										
SAWTIMBER STANDS												
Ponderosa pine	2,518	7,606	48	-	-	-	-	-	-	-	-	7,654
Douglas-fir	3,664	-	15,081	-	1,739	388	-	-	-	-	-	17,208
Spruce	-	-	-	-	-	-	-	-	-	-	-	-
Lodgepole pine	6,533	-	59	59	23,278	571	957	-	-	-	-	24,924
Ponderosa pine woodland	-	-	-	-	-	-	-	-	-	-	-	-
Douglas-fir woodland	-	-	-	-	-	-	-	-	-	-	-	-
Lodgepole pine woodland	-	-	-	-	-	-	-	-	-	-	-	-
Hardwood	4,576	-	-	-	-	-	-	15,782	-	310	206	16,298
Total	17,291	7,606	15,188	59	25,017	959	957	15,782	-	310	206	66,084
POLE AND SEEDLING-SAPLING STANDS												
Ponderosa pine	22,313	12,557	5,394	-	245	-	405	-	-	-	-	18,601
Douglas-fir	48,369	619	3,415	57	333	9	49	-	-	-	-	4,482
Spruce	1,427	-	58	219	6	1	4	-	-	-	-	288
Lodgepole pine	73,093	97	2,242	-	6,922	97	390	-	-	-	-	9,748
Ponderosa pine woodland	40,173	951	233	-	4	-	19	-	-	-	-	1,207
Douglas-fir woodland	4,052	-	-	-	-	-	-	-	-	-	-	-
Lodgepole pine woodland	60	-	-	-	-	-	-	-	-	-	-	-
Hardwood	8,117	-	-	-	-	-	-	177	-	-	-	177
Total	197,604	14,224	11,342	276	7,510	107	867	177	-	-	-	34,503
Total all stands	214,895	21,830	26,530	335	32,527	1,066	1,824	15,959	-	310	206	100,587

1/ The utilizable volume of hardwoods and pines larger than 11.0 inches d.b.h. and of trees of all other species larger than 13.0 inches d.b.h., scaled in 16-foot logs.

CASCADE COUNTY

Table 7. - Cubic volume 1/ of the nonreserved commercial forests by species, tree size and stand class, 1947

Species	Sawtimber stands			Pole stands			Seedling-sapling stands			All stands		
	Sawtimber trees 2/	Cordwood trees 3/	Total	Sawtimber trees 2/	Cordwood trees 3/	Total	Sawtimber trees 2/	Cordwood trees 3/	Total	Sawtimber trees 2/	Cordwood trees 3/	Total
	Thousand cubic feet											
Ponderosa pine	1,246.9	74.5	1,321.4	2,698.7	6,985.3	9,684.0	55.6	148.7	204.3	4,001.2	7,208.5	11,209.7
Douglas-fir	2,812.5	261.3	3,073.8	2,169.4	19,414.0	21,583.4	44.7	894.9	939.6	5,026.6	20,570.2	25,596.8
Spruce	10.7	4.2	14.9	68.3	928.9	997.2	-	22.7	22.7	79.0	955.8	1,034.8
Lodgepole pine	4,905.3	1,376.5	6,281.8	1,569.0	21,740.3	23,309.3	2.4	919.3	921.7	6,476.7	24,036.1	30,512.8
Alpine fir	188.1	25.5	213.6	30.6	502.4	533.0	-	17.3	17.3	218.7	545.2	763.9
White bark and limber pine	187.6	36.4	224.0	1,158.7	10,492.5	11,651.2	18.2	370.0	388.2	1,364.5	10,898.9	12,263.4
Cottonwood	4,153.1	83.1	4,236.2	46.6	719.4	766.0	-	-	-	4,199.7	802.5	5,002.2
Golden aspen	-	-	-	-	395.2	395.2	-	-	-	-	395.2	395.2
Box elder	62.0	1.2	63.2	-	-	-	-	-	-	62.0	1.2	63.2
Black willow	41.2	0.8	42.0	-	-	-	-	-	-	41.2	0.8	42.0
Total	13,607.4	1,863.5	15,470.9	7,741.3	61,178.0	68,919.3	120.9	2,372.9	2,493.8	21,469.6	65,414.4	86,884.0

1/ The sound volume to a 4-inch top exclusive of bark of all trees larger than 5.0 inches d.b.h. including the stem only of coniferous trees and stem and limbs of hardwood trees.

2/ Hardwoods and pines larger than 11.0 inches d.b.h. and of trees of all other species larger than 13.0 inches d.b.h.

3/ Sound trees more than 5.0 inches d.b.h. but less than sawtimber size.

CASCADE COUNTY

Table 8. - Current annual board-foot increment 1/ (Scribner rule) of the nonreserved commercial forests by species, stand class and ownership, 1947

Species	National forest			All other owners			All owners		
	Sawtimber	Pole and seedling-sapling	Total	Sawtimber	Pole and seedling-sapling	Total	Sawtimber	Pole and seedling-sapling	Total
	Thousand board feet								
Ponderosa pine	3	645	648	26	633	659	29	1,278	1,307
Douglas-fir	21	489	510	5	359	364	26	848	874
Spruce	-	24	24	-	3	3	-	27	27
Lodgepole pine	42	254	296	1	29	30	43	283	326
Alpine fir	1	3	4	-	-	-	1	3	4
White bark and limber pine	2	40	42	-	23	23	2	63	65
Cottonwood	-	-	-	158	5	163	158	5	163
Golden aspen	-	-	-	-	-	-	-	-	-
Box elder	-	-	-	3	-	3	3	-	3
Black willow	-	-	-	2	-	2	2	-	2
Total	69	1,455	1,524	195	1,052	1,247	264	2,507	2,771

1/ The net increment of hardwoods and pines larger than 11.0 inches d.b.h. and of all other species larger than 13.0 inches d.b.h.; estimated in 16-foot logs to a utilizable top diameter.

CASCADE COUNTY

Table 9. - Current annual cubic-foot increment 1/ of the nonreserved commercial forests by species, stand class and ownership, 1947

Species	National forest			All other owners			All owners		
	Sawtimber	Pole and seedling-sapling	Total	Sawtimber	Pole and seedling-sapling	Total	Sawtimber	Pole and seedling-sapling	Total
	Thousand cubic feet								
Ponderosa pine	0.5	217.5	218.0	5.4	319.1	324.5	5.9	536.6	542.5
Douglas-fir	7.9	599.2	607.1	1.7	322.7	324.4	9.6	921.9	931.5
Spruce	-	22.5	22.5	-	5.7	5.7	-	28.2	28.2
Lodgepole pine	12.4	998.2	1,010.6	0.2	70.2	70.4	12.6	1,068.4	1,081.0
Alpine fir	0.3	19.7	20.0	0.2	3.1	3.3	0.5	22.8	23.3
White bark and limber pine	0.5	453.6	454.1	-	86.9	86.9	0.5	540.5	541.0
Cottonwood	-	-	-	42.4	34.3	76.7	42.4	34.3	76.7
Golden aspen	-	3.7	3.7	-	8.4	8.4	-	12.1	12.1
Box elder	-	-	-	0.6	-	0.6	0.6	-	0.6
Black willow	-	-	-	0.4	-	0.4	0.4	-	0.4
Total	21.6	2,314.4	2,336.0	50.9	850.4	901.3	72.5	3,164.8	3,237.3

1/ The net increment in the portion of the stem from the stump to a 4-inch top diameter of all trees larger than 5.0 inches d.b.h.

CASCADE COUNTY

Table 10. - Average 1/ annual cutting and fire drain on the nonreserved commercial forests by species and tree class

Species	All ownerships					
	Sawtimber trees			Sawtimber and cordwood trees		
	Cutting	Fire 2/	Total	Cutting	Fire 2/	Total
	Thousand board feet 3/			Thousand cubic feet 4/		
Ponderosa pine	-	-	-	-	2.6	2.6
Douglas-fir	16	9	25	7.3	83.9	91.2
Spruce	-	-	-	-	2.5	2.5
Lodgepole pine	4	2	6	92.1	20.0	112.1
Alpine fir	-	-	-	-	1.2	1.2
White bark and limber pine	-	-	-	-	15.0	15.0
Cottonwood	819	-	819	231.2	-	231.2
Black willow	-	-	-	2.5	-	2.5
Total	839	11	850	333.1	125.2	458.3

1/ Cutting drain of sawlogs is for the period 1925-34 inclusive, of minor products for various more recent periods. Cutting drain includes only green-cut material.
2/ Fire drain is for the period 1931-37 inclusive.
3/ Volume is estimated in 16-foot logs by Scribner rule.
4/ The stem wood of all trees larger than 5.0 inches d.b.h. between the stump and a 4-inch top diameter.

Definition of Terms

Commercial Forest Land

Land bearing or capable of bearing commercial timber and economically accessible, now or prospectively. It may or may not be reserved from cutting.

Stocked commercial forest

Areas with generally 3 thousand board feet or more 2/ of sawtimber per acre, or areas that are more than 10 percent stocked with poles, seedlings, or saplings.

Commercial stands are classified into 5 forest types as follow:

Ponderosa pine - Stands in which ponderosa pine constitutes 25 percent or more of the total net cubic volume.

Douglas-fir - Stands in which Douglas-fir constitutes 60 percent or more of the total net cubic volume.

Spruce - Stands in which Engelmann and/or white spruce constitute 50 percent or more of the total net cubic volume.

Lodgepole pine - Stands in which lodgepole pine constitutes 50 percent or more of the total net cubic volume.

Hardwood - Stands in which hardwoods constitute 50 percent or more of the total net cubic volume.

Commercial stands are also grouped into 3 classes according to size of trees predominating. These are:

Sawtimber stands - Stands in which a plurality of the total net cubic volume is in trees of sawtimber size and that generally average 3 thousand board feet or more of sawtimber volume per acre.

Hardwoods and pines 11.0 inches in diameter and larger at breast height are classed as sawtimber. For other species, trees 13.0 inches and larger are classed as sawtimber.

2/ All board-foot volumes mentioned in the definitions are determined by the Scribner rule.

Pole stands - Stands in which a plurality of the total net cubic volume is in trees from 5.0 inches in diameter to sawtimber size.

Seedling-sapling stands - Stands in which a plurality of the total net cubic volume is in trees less than 5.0 inches in diameter.

Nonstocked commercial forest land

Nonstocked cutover - Unimproved, logged areas which at the date of mapping generally averaged less than 3 thousand board feet per acre, and were less than 10 percent stocked with poles and/or seedlings and saplings.

Nonstocked burn - Unimproved lands deforested by fire which at the date of mapping generally averaged less than 3 thousand board feet per acre, and were less than 10 percent stocked with poles and/or seedlings and saplings.

Noncommercial Forest Land

Chiefly valuable for purposes other than timber production. Subalpine and other forest land which, because of low productivity or extreme inaccessibility, appears to be permanently out of the commercial timber-producing class.

Classes of Land Ownership

Large private - The land owned by the Northern Pacific Railway and Anaconda Copper Mining Company.

Small private - The land area held by all other private owners.

State - The land area owned by the State of Montana.

County - The land area owned by Cascade County.

Public domain - Federal land unreserved for any special purpose.

National forest - Federal land area managed by the Forest Service of the Department of Agriculture.

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